CLAIMS

1. A semiconductor light-emitting element, characterized by comprising a selective crystal growth layer formed by selectively growing a compound semiconductor of a Wurtzite type, and a clad layer of a first conduction type, an active layer and a clad layer of a second conduction type, which are formed on the selective crystal growth layer, wherein part or all of said active layer is formed as extending in parallel to different crystal planes, respectively, and a first light-emitting wavelength region and a second light-emitting wavelength region whose light-emitting wavelengths are different from each other are formed at said active layer and are arranged in such a way that an electric current is chargeable into said first light-emitting wavelength region and said second light-emitting wavelength region, respectively.

2. A semiconductor light-emitting element according to Claim 1, characterized in that said different crystal planes include two or more crystal planes selected from a (0001) plane, a (1-100) plane, a (1-101) plane, a (11-20) plane, a (1-102) plane, a (1-123) plane and a (11-22) plane of the Wurtzite type and crystal planes equivalent thereto.

3. A semiconductor light-emitting element according to Claim 1, characterized in that said selective crystal growth layer consists of a layer which is selectively grown from an opening of a mask layer formed on an underlying crystal layer.

4. A semiconductor light-emitting element according to Claim 1, characterized in that said selective crystal growth layer consists of a layer selectively grown from a seed crystal portion formed on a substrate.

5. A semiconductor light-emitting element according to Claim 1, characterized in that said selective crystal growth layer consists of a layer formed by processing a surface of an underlying crystal layer in the form of irregularities and selectively growing from the irregularities.

6. A semiconductor light-emitting element according to Claim 1, characterized in that said selective crystal layer is made of a nitride semiconductor.

7. A semiconductor light-emitting element according to Claim 1, characterized in that said active layer consists of a semiconductor crystal layer formed by one growth cycle.

8. A semiconductor light-emitting element according to Claim 1, characterized in that at least one of electrodes for said first light-emitting wavelength region and said second light-emitting wavelength region is individually formed for the respective wavelength regions, and an independent signal is supplied to the individually formed electrodes.

9. A semiconductor light-emitting element according to Claim 1, characterized in that at least one of electrodes for said first light-emitting wavelength region and said second light-emitting wavelength region is individually formed for the respective wavelength regions, and such a signal as to permit the same level of emission intensity is applied to the individually formed electrodes, respectively.

10. A semiconductor light-emitting element according to Claim 1, characterized in that said active layer further comprises a third light-emitting wavelength region capable of emitting light with an emission wavelength which differs from the emission wavelengths of said first light-emitting wavelength region and said second light-emitting wavelength region.

11. A semiconductor light-emitting element, characterized by comprising a selective crystal growth

layer formed by selectively growing a compound semiconductor of a Wurtzite type, and a clad layer of a first conduction type, an active layer and a clad layer of a second conduction type, formed on the selective crystal growth layer, wherein said active layer is constituted of a ternary or more mixed crystal material such that a diffusion length of an atom constituting part of said mixed crystal material is made shorter than an extending length of said active layer, so that a first light-emitting wavelength region and a second light-emitting wavelength region having light-emitting wavelengths different from each other are formed at said active layer, respectively, and are arranged in such a way that an electric current is chargeable into said first light-emitting wavelength region and said second light-emitting wavelength region, respectively.

12. A semiconductor light-emitting element according to Claim 11, characterized in that said compound semiconductor of the Wurtzite type is made of a nitride semiconductor, said active layer is constituted of an InGaN layer, and said atom consists of In.

13. A semiconductor light-emitting element, characterized by comprising a selective crystal growth layer formed by selectively growing a compound

semiconductor of a Wurtzite type, and a clad layer of a first conduction type, an active layer and a clad layer of a second conduction type, formed on the selective crystal growth layer, wherein a first light-emitting wavelength region and a second light-emitting wavelength region, which are different from each other with respect to the light-emitting wavelength due to a difference in at least one of a composition and a thickness thereof, are formed at said active layer, respectively, and are arranged in such a way that an electric current is chargeable into said first light-emitting wavelength region and said second light-emitting wavelength region, respectively.

14. A semiconductor light-emitting element according to Claim 13, characterized in that said selective crystal growth layer consists of a layer which is selectively grown from an opening of a mask layer formed on an underlying crystal layer.

15. A semiconductor light-emitting element according to Claim 13, characterized in that said selective crystal growth layer consists of a layer selectively grown from a seed crystal portion formed on a substrate.

16. A semiconductor light-emitting element

according to Claim 13, characterized in that said selective crystal growth layer consists of a layer formed by processing a surface of an underlying crystal layer in the form of irregularities and selectively growing from the irregularities.

17. A semiconductor light-emitting element according to Claim 13, characterized in that said first light-emitting wavelength region and said second light-emitting wavelength region formed at said active layer are, respectively, formed at a side portion which is a contact line between adjacent planes of said selective crystal growth layer and at a plane portion of said selective crystal growth layer.

18. A semiconductor light-emitting element according to Claim 13, characterized in that said selective crystal growth layer has an S plane whose orientation differs, at least, from that of a principal plane of a substrate.

19. A semiconductor light-emitting element according to Claim 13, characterized in that said active layer is made of a ternary or more mixed crystal material, a mixed crystal ratio differs between said first light-emitting wavelength region and said second light-emitting wavelength region.

20. A semiconductor light-emitting element according to Claim 19, characterized in that said active layer is made of an InGaN layer, and a mixed crystal ratio in the InGaN layer differs between said first light-emitting wavelength region and said second light-emitting wavelength region.

21. A semiconductor light-emitting element according to Claim 13, characterized in that said selective crystal growth layer is made of a nitride semiconductor.

22. A semiconductor light-emitting element according to Claim 13, characterized in that said active layer is made of a semiconductor crystal layer formed by one cycle of growth.

23. A semiconductor light-emitting element according to Claim 13, characterized in that two or more electrodes of said first conduction type are provided.

24. A semiconductor light-emitting element according to Claim 13, characterized in that at least one of electrodes for said first light-emitting wavelength region and said second light-emitting wavelength region is individually formed for the respective wavelength regions, and the same signal is supplied to the individually formed electrodes.

25. A semiconductor light-emitting element according to Claim 13, characterized in that said active layer further comprises a third light-emitting wavelength region capable of emitting light with an emission wavelength which differs from the emission wavelengths of said first light-emitting wavelength region and said second light-emitting wavelength region.

26. A semiconductor light-emitting element according to Claim 13, characterized in that said first light-emitting wavelength region, said second light-emitting wavelength region and a third light-emitting wavelength region are provided so that light emission is possible at least simultaneously at two different wavelengths.

27. A semiconductor light-emitting device, characterized by comprising a substrate, a plurality of selective crystal growth layers formed by selectively growing a compound semiconductor of a Wurtzite type on said substrate, and a clad layer of a first conduction type, an active layer and a clad layer of a second conduction type formed on each of the plurality of selective crystal growth layer, respectively, wherein two or more light emission groups, each consisting of the plurality of selective crystal growth layers that are the

same or similar to each other with respect to a shape element thereof, are formed on one substrate and the light emission groups, respectively, have light-emitting wavelengths different from each other owing to a difference in the shape element.

28. A semiconductor light-emitting device according to Claim 27, characterized in that said selective crystal growth layer is selectively grown via openings of a mask layer formed on an underlying crystal layer, and said shape element includes a shape, a size and an array density of the openings.

29. A semiconductor light-emitting device according to Claim 27, characterized in that said selective crystal growth layer is selectively grown from a seed crystal portion formed on said substrate, and said shape element includes a shape, a size and an array density of the seed crystal portion.

30. A semiconductor light-emitting device according to Claim 27, characterized in that an independent signal is supplied to the plurality of light emission groups, respectively.

31. A semiconductor light-emitting device according to Claim 27, characterized in that the same signal is supplied to the plurality of light emission

groups.

32. An image display device, characterized by comprising, as a pixel, a semiconductor light-emitting element which comprises a selective crystal growth layer formed by selectively growing a compound semiconductor of a Wurtzite type, and a clad layer of a first conduction type, an active layer and a clad layer of a second conduction type, which are formed on the selective crystal growth layer, wherein part or all of said active layer is formed as extending in parallel to different crystal planes, respectively, and a first light-emitting wavelength region and a second light-emitting wavelength region whose light-emitting wavelengths are different from each other are formed at said active layer and are arranged in such a way that an electric current is chargeable into said first light-emitting wavelength region and said second light-emitting wavelength region, respectively.

33. An illumination device, characterized by comprising a plurality of semiconductor light-emitting elements in array, each comprising a selective crystal growth layer formed by selectively growing a compound semiconductor of a Wurtzite type, and a clad layer of a first conduction type, an active layer and a clad layer

of a second conduction type, which are formed on the selective crystal growth layer, wherein part or all of said active layer is formed as extending in parallel to different crystal planes, respectively, and a first light-emitting wavelength region and a second light-emitting wavelength region whose light-emitting wavelengths are different from each other are formed at said active layer and are arranged in such a way that an electric current is chargeable into said first light-emitting wavelength region and said second light-emitting wavelength region, respectively.

34. An image display device, characterized by comprising, as a pixel, a semiconductor light-emitting element which comprises a selective crystal growth layer formed by selectively growing a compound semiconductor of a Wurtzite type, and a clad layer of a first conduction type, an active layer and a clad layer of a second conduction type, formed on the selective crystal growth layer, wherein said active layer is constituted of a ternary or more mixed crystal material such that a diffusion length of an atom constituting part of said mixed crystal material is made shorter than an extending length of said active layer, so that a first light-emitting wavelength region and a second light-emitting

wavelength region having light-emitting wavelengths different from each other are formed at said active layer, respectively, and are arranged in such a way that an electric current is chargeable into said first light-emitting wavelength region and said second light-emitting wavelength region, respectively.

35. An illumination device, characterized by comprising a plurality of semiconductor light-emitting elements in array, each comprising a selective crystal growth layer formed by selectively growing a compound semiconductor of a Wurtzite type, and a clad layer of a first conduction type, an active layer and a clad layer of a second conduction type, formed on the selective crystal growth layer, wherein said active layer is constituted of a ternary or more mixed crystal material such that a diffusion length of an atom constituting part of said mixed crystal material is made shorter than an extending length of said active layer, so that a first light-emitting wavelength region and a second light-emitting wavelength region having light-emitting wavelengths different from each other are formed at said active layer, respectively, and are arranged in such a way that an electric current is chargeable into said first light-emitting wavelength region and said second

light-emitting wavelength region, respectively.

36. An image display device, characterized by comprising, as a pixel, a semiconductor light-emitting element which comprises a selective crystal growth layer formed by selectively growing a compound semiconductor of a Wurtzite type, and a clad layer of a first conduction type, an active layer and a clad layer of a second conduction type, formed on the selective crystal growth layer, wherein a first light-emitting wavelength region and a second light-emitting wavelength region, which are different from each other with respect to the light-emitting wavelength due to a difference in at least one of a composition and a thickness thereof, are formed at said active layer, respectively, and are arranged in such a way that an electric current is chargeable into said first light-emitting wavelength region and said second light-emitting wavelength region, respectively.

37. An illumination device, characterized by comprising a plurality of semiconductor light-emitting elements in array, each comprising a selective crystal growth layer formed by selectively growing a compound semiconductor of a Wurtzite type, and a clad layer of a first conduction type, an active layer and a clad layer of a second conduction type, formed on the selective

crystal growth layer, wherein a first light-emitting wavelength region and a second light-emitting wavelength region, which are different from each other with respect to the light-emitting wavelength due to a difference in at least one of a composition and a thickness thereof, are formed at said active layer, respectively, and are arranged in such a way that an electric current is chargeable into said first light-emitting wavelength region and said second light-emitting wavelength region, respectively.

38. An image display device, characterized by comprising, as a pixel, a semiconductor light-emitting device which comprises a substrate, a plurality of selective crystal growth layers formed by selectively growing a compound semiconductor of a Wurtzite type on said substrate, and a clad layer of a first conduction type, an active layer and a clad layer of a second conduction type formed on each of the plurality of selective crystal growth layer, respectively, wherein two or more light emission groups, each consisting of the plurality of selective crystal growth layers that are the same or similar to each other with respect to a shape element thereof, are formed on one substrate and the light emission groups, respectively, have light-emitting

wavelengths different from each other owing to a difference in the shape element.

39. An illumination device, characterized by comprising a plurality of semiconductor light-emitting devices in array, each comprising a substrate, a plurality of selective crystal growth layers formed by selectively growing a compound semiconductor of a Wurtzite type on said substrate, and a clad layer of a first conduction type, an active layer and a clad layer of a second conduction type formed on each of the plurality of selective crystal growth layer, respectively, wherein two or more light emission groups, each consisting of the plurality of selective crystal growth layers that are the same or similar to each other with respect to a shape element thereof, are formed on one substrate and the light emission groups, respectively, have light-emitting wavelengths different from each other owing to a difference in the shape element.